CHAPTER 4

PYROTECHNICS

4-1. GENERAL

Pyrotechnics produce either smoke or light and are consumed in the process. When used for communications, prearranged or prescribed signals are developed and used throughout a unit. These signals are developed based on the color and characteristics of the pyrotechnic device used. Pyrotechnic signals supplement or replace normal means of communication and allow a large number of troops and/or isolated units to be signaled quickly. They can be used for friendly unit identification, maneuver element control, fire support control, target marking, and location reports. When pyrotechnics are used, the signal and its meaning are included in the command and signal portion of the operation order and in the unit's communications-electronics operating instructions.

WARNING

DO NOT DISCHARGE PYROTECHNICS IN THE VICINITY OF AIRCRAFT FLYING IN THE AREA.

4-2. Description

Pyrotechnics are usually issued as complete rounds. There are two common types of military pyrotechnics used for signaling--hand-held devices and ground smoke. (The M203 grenade launcher can fire pyrotechnic rounds; see FM 23-31.)

4-3. Handheld Signals

a. Handheld signals are rocket-propelled, fin-stabilized, and consist of three concentric tubes. The outer tube is the container, the next is the launcher, and inside the launcher is the fin-stabilized tube containing the rocket propellant and signal element. When fired, the fin-stabilized tube is lifted about 50 feet in the air, the signal element is expelled, and it burns from 4 to 42 seconds, (depending upon the type of signal: cluster, or parachute devices).

b. The following types of handheld signal rockets are available.

(1) Star Clusters. Star clusters are used for signaling and illuminating. They are issued in an expendable launcher that consists of a launching tube and a firing cap. These signals produce a cluster of five free-falling pyrotechnic stars. Star clusters are available in green, red, and white (Figure 4-1).

Figure 4-1. STAR CLUSTERS

(2) Star parachutes. Star parachutes are used for signaling and illuminating. They are issued in an expendable launcher that consists of a launching tube and a firing cap. These signals produce a single parachute-suspended illuminant star. Star parachutes are available in green, red, and white (Figure 4-2).

Figure 4-2. SINGLE STAR.

(3) Smoke parachutes. Smoke parachutes are used for signaling only. They are issued in an expendable launcher that consists of a launching tube and a firing cap. The device is a perforated cannister that is parachute-suspended. They are available in green, yellow, and red smoke.

4-4. Ground Smoke

a. Smoke may be used for both ground and ground-to-air signaling. Both white and colored smoke may be used for this purpose. Smoke signals are visible over greater distances when employed against a terrain background of contrasting color. Smoke is valuable for marking unit flanks, positions of lead elements, locations of targets, drop zones, tactical landing areas, and medical evacuation landing sites. Smoke signals are not suitable for messages, but are applicable when communicating by prearranged signals between small units and with aircraft. Smoke signals may be observed by the enemy; therefore, due regard for secrecy must be

considered to try and avoid disclosing position locations and/or a unit's intentions.

b. Smoke grenades are available in white, green, yellow, red, and violet smoke. This color range is provided by two types of grenades.

(1) The white smoke hand grenade is a burning-type grenade used for signaling and for laying smoke screens. When ignited, it produces dense white smoke for 105 to 150 seconds. It will not normally injure exposed troops. In heavy concentrations, troops should wear the field protective mask. However, the mask will not protect against heavy concentrations of this smoke in enclosed spaces due to oxygen depletion and carbon monoxide buildup.

(2) The M18 colored smoke grenade is similar in appearance to the white smoke grenade, but its top is painted the color of the smoke it produces. Its filler is a burning-type mixture containing a dye; only four are standard: red, green, violet, and yellow. As a burning-type grenade, it has an igniting-type fuse, and burns 50 to 90 seconds.